

REMARKS

Favorable consideration and allowance of the claims of the present application are respectfully requested.

Claims 1-8 are pending in the present application and Claims 9-26 withdrawn in response to a restriction requirement as being directed to a fabricating apparatus for a liquid crystal device, classified in Class 349, subclass 191.

In the Office Action, the Examiner first objected the specification as having a title that is allegedly not clearly indicative of the invention to which the claims are directed. In response, Applicants amend the title to read AN ECB-TYPE VERTICALLY ALIGNED LIQUID CRYSTAL DEVICE which they respectfully submit is more clear and definite. Further in the Office Action, the Examiner objected to the Abstract as allegedly not clearly stating which is new in the art to which the invention pertains as claimed. In light of amendments to the Claims setting forth further inventive features, applicants submit a new Abstract of the Disclosure accordingly.

The Examiner is respectfully requested to remove the objection to the title and the Abstract of the invention. Applicants further take this opportunity to correct a minor informality in the specification on page 5.

Further, in the Official Action dated July 16, 2003, which has been made FINAL, the Examiner rejected Claims 1-4 under 35 U.S.C. §102(b), as being anticipated by Shimada (U.S. Patent No. 5,710,609) (hereinafter "Shimada"). The Examiner further rejected Claims 5-8 under 35 U.S.C. §103(a), as being unpatentable over Shimada.

Applicants respectfully disagree. First of all, Claims 3 and 7 have been canceled and the subject matter thereof wholly incorporated in respective independent Claims 1 and 5 to

set forth the limitation that the a liquid crystal material including liquid crystal molecules each having a negative dielectric anisotropy, said liquid crystal material filled in a gap formed between the alignment films such that said liquid crystal molecules are substantially vertically oriented with respect to said substrates by exposure to light illuminated from outside said substrates.

Respectfully, this feature is neither taught nor suggested by Shimada. Shimada is primarily directed to forming a pair of insulating substrates having vertical alignment fields such that when the substrates face each other, their orientation directions vary by 180° degrees. Use of the oriented vertical alignment films and other parameters such as thickness of the liquid crystal (LC) layer in relation to a twist pitch of the LC nematic molecule (See Col. 5, lines 20-25), and use of chiral dopants in the LC material (See Col. 6, lines 41-48) for generating a twist that is regarded as novel in Shimada enables LCD molecules in a pi (π) cell orientation of the liquid crystal layer to become aligned almost perpendicular to the substrate in the absence of an electric field (See Col. 6, lines 29-40)(emphasis added). Respectfully, Shimada discloses conventional use of polyamide alignment film (subject to rubbing alignment method) that as a result enables the LCD molecules to orient slightly tilted with respect to the direction of the substrate normal (See Col. 6, lines 56-60)(emphasis added). From the foregoing, it appears that in a black state, no voltage applied, the LCD molecules are oriented almost perpendicular to the substrate. Respectfully, this is the same as the description in the prior art of the present application such as described in the present specification at page 2, lines 16-30.

In the invention, as described for instance at page 9, lines 26- page 10, line 9, there is recognized the phenomena of exposing the LCD molecules to light by an exposing means so that the orientation of the molecules is substantially perpendicular to the substrates.

Furthermore, the invention utilizes Twisted Nematic (TN) LC molecules, as opposed to nematic type with chiral dopants used in Shimada.

The limitations of utilizing light exposure to vertically orient the LC molecules has a technical importance not recognized in Shimada, namely, the improvement in LC response time when the LCD driving voltage is varied, which improves viewing quality.

In Shimada there is no teaching or suggestion of subjecting the LCD molecules to light exposure in order to align the LCD molecules vertically as in the present invention as claimed in Claims 1 and 5. For instance, at Col. 7, lines 25 et seq., Shimada describes an embodiment of an electro-optical device that suggests only alignment film layer as the means for orienting molecules – with no light exposure.

Respectfully, the same arguments provided in the traversal herein applies to the rejection of Claim 5 which is directed to the LCD device having a divided domain by light exposure using masks in prescribed regions. The same principles apply in the LCD divided domain embodiment set forth in amended Claim 5.

Consequently, it is respectfully requested that the Examiner withdraw the rejections of Claims 1 and 5 as being anticipated by Shimada and withdraw the rejections of all remaining pending claims respectively dependent thereon.

Wherefore, consideration and allowance of the claims of the present application are respectfully requested.

If the Examiner believes that a telephone conference with the Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned, Applicants' attorney, at the following telephone number: (516) 742-4343.

Respectfully submitted,



Steven Fischman
Registration No. 34,594
Attorney for Applicants

SCULLY, SCOTT, MURPHY & PRESSER
400 Garden City Plaza
Garden City, New York 11530
(516) 742-4343
SF:gc

RECEIVED